TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Taminco Inc.
4575 Highway 90 East
Pace, Florida 32571

Taminco Pace Plant
Facility ID No. 1130004

PROJECT

Project No. 1130004-020-AC
Application for Title V Air Construction Permit
No. 4 Methylamines Plant Expansion

COUNTY

Santa Rosa, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Air Resource Section
Northwest District Office
160 W Government Street, Suite 308
Pensacola, Florida 32502-5740

October 25, 2012

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

Facility Description and Location

Taminco Inc. (Taminco), a producer of a variety of amines, is an existing major stationary facility which is categorized under Standard Industrial Classification Code No. 2869, Industrial Organic Chemicals. The facility is located in Santa Rosa County at 4575 Highway 90 East in Pace, Florida. The UTM coordinates of the existing facility are Zone 16, 486.9 km East, and 3382.7 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

Facility Regulatory Categories

- The facility is a major source of hazardous air pollutants (HAP).
- The facility has no units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Project Description

Taminco is proposing to expand the existing No. 4 Methylamines (MA) Plant to increase production of monomethylamine (MMA), dimethylamine (DMA), and trimethylamine (TMA) at the facility. The MA process involves reacting methanol, ammonia, and some recycled methylamines in two fixed bed catalytic reactors followed by distillation in several columns.

Steam demands for the proposed project will be reduced on pounds of steam per ton of product produced basis; however, total steam usage at the expanded No. 4 MA Plant will be approximately two times the current amount of steam used at the No. 4 MA Plant. Approximately 47% of the steam will come from the Gulf Power cogeneration units and the remaining 53% will be produced by the existing two boilers (Riley Stoker and B&W boilers). In addition to the modifications to the No. 4 MA Plant, Flue Gas Recirculation (FGR) will be installed on the boilers to reduce NOx emissions.

The project will reuse existing equipment and foundations to the maximum extent possible. Since all existing columns, except for the Separation Column, will be in new service, significant rearrangement and repiping of existing equipment will be required.

The Project scope includes extensive provisions to minimize the environmental impact. These include:

- Heat integration using an innovative hot water circulating loop to reduce the amount of steam required to produce a pound of product by over 50%;
- The installation of flue gas recirculation on the Riley Stoker and B&W boilers to reduce NOx emissions; and,
- The use of bellows sealed valves and sealless pumps to reduce fugitive emissions.

The No. 4 MA Plant expansion project will include the following process and equipment changes.

The project will upgrade or replace methanol supply pumps and associated piping at the methanol storage area. A new methanol supply line will be installed from the methanol storage area to the No. 4 MA Plant. A new 7,500-gallon methanol feed tank (D-67043) and a new 20,000-gallon ammonia/methylamines recycle feed tank (D-67044) will be installed. These new feed tanks will be vented to the amines plants flare via existing absorbers.

The feed stream to the methylamines process will be preheated using reactor effluents in a series of heat exchangers, including two waste heat boilers, to maximize energy efficiency.

Additional heat integration will be accomplished through use of a hot water circulation loop. The hot water loop will absorb waste heat in the process and transfer it back to the process where heat addition is needed.

One column in the distillation train (new Ammonia Column, T-67024) will separate unreacted ammonia for recycle. The main reboiler for the Ammonia Column will use steam produced by one of the reactor waste heat boilers and steam from flashing of condensate in the new condensate tank. A secondary steam reboiler is provided for start-up.

Another column (reused T-67015, the old ammonia column converted to TMA service) will perform extractive distillation using water recovered from the column(s) that follow it in the process. Vapors, in the form of dry MMA and DMA, will be fed from the new Dehydration Column, T-67025, to the existing Dehydration Column, T-67020.

The existing Dehydration column will be converted to DMA service. A new reboiler is required for the conversion to make use of the hot water loop instead of steam, and a new condenser is also required due to the lower temperature with the change of service. The overheads from the DMA column, a mixture of MMA and DMA, will be fed to the last column in the train.

A purge column, T-67026, will be used to recover product from the dehydration column tray purge.

High purity MMA product will be taken from the overheads of the existing Separation Column, T-67023, and DMA product will be taken from the bottoms. An additional overhead condenser, E-67065, will be added to the Separation Column and a new reboiler will be installed to make use of the hot water system instead of steam. No other significant modifications are anticipated for this column.

An auxiliary column, the existing No. 4 Environmental Column, T-67022, currently in TMA service, will be used to recover unreacted methanol from both the No. 4 MA Plant and the No. 1 MA Plant Dehydration Column. This column was designed for this service, so no significant modifications to it are anticipated. A new condenser will be installed to utilize the hot water circulation loop rather than cooling water. The No. 1 Environmental Column will be retired.

Condenser E-671119 will be placed in service as the No. 1 MA Plant Column Sidedraw Condenser. Condenser E-67037 (No. 4 MA Plant Dehydration Column Sidedraw Condenser) will be replaced by Condenser E-67068 (new Dehydration Column Sidedraw Condenser).

Taminco currently operates four cooling towers. The MA Plant expansion will modify one of the existing cooling towers (CT-67038) by adding an identical cell (CT-67039).

Affected emissions units include the following:

Facility ID No. 1130004

ID No.	Regulated Emissions Unit Description
EU001	Riley Stoker Boiler
EU003	B&W Boiler
EU005	Amines Plants Flare
EU029	Methylamines Plants Nos. 1 and 4 Group 1 HON Storage Tanks
EU033	Methylamines Plant No. 4 Process Vents
EU034	Methylamines Plant No.4 Wastewater
EU035	Methylamines Plant No. 4 HON Maintenance Wastewater
EU036	Methylamines Plants Nos. 1 and 4 HON Equipment Leaks
EU037	Methylamines Plant No. 4 VOC Equipment Leaks
EU046	Sitewide HON Heat Exchangers
EU050	Methylamines Plant No. 1 Wastewater
EU051	Methylamines Plant No. 1 HON Maintenance Wastewater
EU053	Methylamines Plants Nos. 1 & 4 HON Group 2 HON Storage Tanks
EU054	Methylamines Plants Nos. 1 & 4 NSPS Storage Tanks
EU060	Methylamines Plant No. 4 Gas Fired Heater
EU062	Facility-Wide Equipment Leak Fugitives
EU063	Cooling Towers (4)
EU075	Wastewater Treatment Plant Fugitives

Emission Units 034, 035, 036, 037, 050, 054 & 060 are not explicitly identified on the application scope list, however, these emission units are affected by this project as follows:

EU 034 - Methylamines Plant No.4 Wastewater: Increased wastewater from increased production at No. 4 MA Plant.
EU 035 - Methylamines Plant No. 4 HON Maintenance Wastewater: Methanol containing wastewater will no longer be routed to the Recycle Feed Tank, D-67001, or the Recycle Feed Tank Cooler, E-67001. In addition, piping will be installed to connect new Methanol feed tank to the sewer system.
EU 036 - Methylamines Plants Nos. 1 and 4 HON Equipment Leaks: Adding piping from new and existing equipment in the No. 4 MA Plant.
EU 037 - Methylamines Plant No. 4 VOC Equipment Leaks: Adding piping from new and existing equipment in the No. 4 MA Plant.
EU 050 - Methylamines Plant No. 1 Wastewater: The No. 1 Methylamines Plant environmental column will be taken out of service. The Methylamines Plant No. 1 Wastewater (#1 Environmental Column Bottoms) will no longer be a wastewater stream. Streams currently processed by the #1 Environmental Column will be processed by the #4 Environmental Column.
EU 054 - Methylamines Plants Nos. 1 & 4 NSPS Storage Tanks: Emissions will increase due to the installation of the new ammonia/methylamines Tank (D-67044).
EU 060 - Methylamines Plant No. 4 Gas Fired Heater: Flow of natural gas to the heater will increase due to increased production at the No. 4 MA Plant. However, the maximum allowable operating rate is unchanged from the existing Title V permit.

No physical modifications are planned to the wastewater treatment system. The existing system can handle the additional flow and loading.

Table 1 - Taminco Pace Plant – Summary of No. 4 MA Expansion Project- Emission Unit (EU) Updates

EU No.	Current EU Description	New/ Modified Unit	Affected Unit	Emission Factor Update/ Other	Explanation for project impact or EU Update
001	Riley Stoker Boiler		✓	✓	Affected by increase in steam demand. Also, proposed project will add flue gas recirculation to the boiler. The Riley Stoker Boiler will not have an increase in maximum capacity. Waste oil combustion is not increased by the MA expansion. GHG and $PM_{2.5}$ emissions were added.
003	B & W Boiler		✓	✓	Affected by increase in steam demand. Also, proposed project will add flue gas recirculation to the boiler. The B & W will not have an increase in maximum capacity. GHG and $PM_{2.5}$ emissions were added.
005	Amines Plants Flare		✓	✓	Additional process gas flow from expansion will be burned in the flare. Additional NOx emissions increase from ammonia and amines in the gas are estimated. GHG and $PM_{2.5}$ emissions were added. This includes the addition of a 20,000 gallon ammonia feed tank that also contains methylamines.
029	Methylamines Plants Nos. 1 and 4 Group 1 HON Storage Tanks		✓	✓	Increase in VOC emissions due to an increase in methanol throughput to three methanol storage tanks.
033	Methylamines Plant No. 4 Process Vents		✓		This unit is included for regulatory purposes. Emissions are accounted for in maximum potential emissions of the Flare (EU 005) and Boilers (EU 001 and EU 003).
035	Methylamines Plant No. 4 HON Maintenance Wastewater	✓	✓	✓	Affected by the new Methanol Feed Tank (part of EU 053). Emissions are based upon vapor produced from clearing methanol equipment for mechanical work. The new Methanol Feed tank will be cleared no more than once per year.
046	Sitewide HON Heat Exchangers	✓	✓		Equipment changes only. Several condensers will be replaced or added.
053	Methylamines Plants Nos. 1 and 4 HON Group 2 Storage Tanks	✓	✓	✓	New Methanol Feed Tank (7,500 gallons).[a]

EU No.	Current EU Description	New/ Modified Unit	Affected Unit	Emission Factor Update/ Other	Explanation for project impact or EU Update
060	Methylamines Plant No. 4 Gas-Fired Heater		✓	✓	Assuming an increase in fuel usage proportional to production from the plant expansion which will result in increased emissions.
062	Facility-Wide Non-regulated Fugitives	✓	✓	✓	Assuming a 30% increase in the fugitive emissions as a result of the expansion. This is conservative due to the exclusive use of bellow valve. Please also note that Taminco has updated the component count and emissions for the existing Nos. 1 and 4 MA Plants as well as the proposed expanded No. 4 MA Plant.
063	Cooling Towers (4) (that do not use chromium-based water treatment chemicals)	✓	✓	✓	The cooling water recirculation rate from the expansion is assumed to be doubled with the addition of a new cooling tower cell. The drift rate for both cells was revised to be consistent with vendor data (drift rate of 0.0005%).
075	Wastewater Treatment Plant Fugitives		✓	✓	With this application, Taminco has updated the WATER9 model with proposed wastewater flow and concentration from the expansion. No physical modifications are expected.

[a] Note: Working losses from the tanks in EU 053 are routed to the Low Pressure Absorber which vents to the Flare.

Table 2 – Taminco Pace Plant – Facility-Wide Impact of No. 4 MA Expansion Project

EU#001	Riley Stoker Boiler	* Increase Steam Demand * Install FGR
EU#003	B&W Boiler	* Increase Steam Demand * Install FGR
EU#005	Amines Plant Flare	* Addition process gas flow from increased production and 20,000 gallon NH3 Feed Tank
EU#006	Methylamines No. 1 Plant Gas-Fired Heater	* No equipment change
EU#007	Higher Amines Plant Gas-Fired Heater	* No equipment change
EU#029	Methylamines Plants Nos. 1 and 4 Group 1 HON Storage Tanks	* Increased Methanol throughput * Upgrade or replacement of supply pumps and piping at one storage tank. * New methanol supply line from storage to the expanded plant.

EU#033	Methylamines Plant No. 4 Process Vents	No equipment change to the No. 4 MA Plant Low Pressure Absorber vent and the High Pressure Absorber vent ("process vents"); however, the following equipment changes will be made to the equipment in the No. 4 MA Plant that is vented to these absorbers: * Install new fixed bed converter with catalyst; * Install new Ammonia Column; * Install new Dehydration Column; * Convert the old ammonia column to TMA service; * Install hot water circulating loop equipment (heat exchangers, waste heat boilers, vaporizers) and associated piping.
EU#034	Methylamines Plant No. 4 Wastewater	* The No. 1 Methylamines Plant environmental column will be taken out of service and the No. 4 Environmental Column, T-67022, placed back in environmental service (Note: This means that the only HON wastewater streams are the Methylamines Plant No. 1 Wastewater (#1 Dehydration Column Bottoms) and the Methylamines Plant No. 4 Wastewater (#4 Environmental Column Bottoms). The Methylamines Plant No. 1 Wastewater (#1 Environmental Column Bottoms) and Methylamines Plant No. 4 Wastewater (#4 Dehydration Column Bottoms) will no longer be wastewater streams). * Increased wastewater from increased production (emissions accounted for in EU#75)
EU#035	Methylamines Plant No. 4 HON Maintenance Wastewater	* MeOH containing wastewater will no longer be routed to the Recycle Feed Tank, D-67001, or the Recycle Feed Tank Cooler, E-67001, but piping will be installed to connect new Methanol feed tank to the sewer system.
EU#036	Methylamines Plants Nos. 1 and 4 HON Equipment Leaks	* Adding piping from new and existing equipment in the No. 4 MA Plant (Note: emissions accounted for in EU#62)
EU#037	Methylamines Plant No. 4 VOC Equipment Leaks	* Adding piping from new and existing equipment in the No. 4 MA Plant
EU#046	Sitewide HON Heat Exchangers	* E-671119 will become the MA Plant No. 1 Column Sidedraw Condenser. * E-67119, No. 1 MA Plant Env. Col condenser will go out of service and be replaced by E-67032, MA No. 4 Plant Env. Col condenser. This condenser will be in cooling tower service and will be subject to the HON regulations. * E-67037, No. 4 MA Plant dehyd. s/d condenser will be replaced by new E-67068 dehyd. s/d condenser; however the condenser will not be in cooling tower service, therefore, this heat exchanger is not subject to the HON.
EU#047	Methanol Storage HON Maintenance Wastewater	* No equipment change
EU#048	Methylamines Plants Sample Points	* No equipment change
EU#049	Methylamines Plant No. 1 Process Vents	* No equipment change to the No. 1 MA Plant Low Pressure Absorber vent and the High Pressure Absorber vent ("process vents"); however, the No. 1 Methylamines Plant environmental column will be taken out of service.
EU#050	Methylamines Plant No. 1 Wastewater	* No equipment change

EU#051	Methylamines Plant No. 1 HON Maintenance Wastewater	* No equipment change due to project, however PTE calcs were updated to include maintenance activities to the E-671119 Dehydration S/D Condenser
EU#053	Methylamines Plants Nos. 1 and 4 HON Group 2 Storage Tanks	* New Methanol Feed Tank
EU#054	Methylamines Plants Nos. 1 & 4 NSPS Storage Tanks	* New ammonia/methylamines Tank (D-67044)
EU#055	72" Batch Column Process Vents	* No equipment change
EU#056	72" Batch Column MON Maintenance Wastewater	* No equipment change
EU#057	Higher Amines and 72" Batch Column MON Equipment Leaks	* No equipment change
EU#058	Higher Amines/72" Batch Column MON Group 2 Storage Tanks/DIMLA Plant - Group 2 Storage Tank	* No equipment change
EU#059	72" Batch Column MON Wastewater	* No equipment change
EU#060	Methylamines Plant No. 4 Gas-Fired Heater	* No equipment change * Increased heat input from increased production
EU#062	Facility Wide Equipment Leak Fugitives	* Adding piping from new and existing equipment in the No. 4 MA Plant
EU#063	Cooling Towers (4)	* Adding new cooling tower cell (CT-67038/67039(new))
EU#066	Higher Amines and 72" Batch Column Group 2 MON Transfer Rack	* No equipment change
EU#070	Higher Amines Process Vents	* No equipment change
EU#071	Higher Amines MON Maintenance Wastewater/DIMLA Plant - MON Maintenance Wastewater	* No equipment change
EU#072	Higher Amines MON Wastewater/DIMLA Plant - MON Group 2 Wastewater	* No equipment change
EU#073	Higher Amines and 72" Batch Column Group 1 MON Storage Tanks	* No equipment change
EU#074	Sitewide MON Heat Exchangers	* No equipment change
EU#075	Wastewater Treatment Plant Fugitives	* No equipment change * Increased wastewater from increased production
EU#076	DIMLA Plant - MON Group 2 Transfer Racks	* No equipment change
EU#077	DIMLA Plant - MON Equipment Leaks	* No equipment change
EU#078	DIMLA Plant - VOC Equipment Leaks	* No equipment change
EU#079	DIMLA Plant - Scrubber	* No equipment change

Processing Schedule

August 9, 2012 Received the application for a major source air pollution construction permit.

2. PSD APPLICABILITY

General PSD Applicability

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, Portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, *chemical process plants*, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM_{10}); volatile organic compounds (VOC); lead (Pb); fluorides (Fl); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 $\mu g/m^3$, 24-hour average.

If the potential emission exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

PSD Applicability for Project

In the methylamines production process, methanol is reacted continuously with ammonia to yield methylamines. A natural gas-fired preheater is used to reach reaction temperature. Distillation columns may vent to the low pressure or high pressure absorbers which vent to the Amines Plants Flare. The flare operates with a natural gas pilot. Process gas from the high pressure absorber vents can also be controlled in the Riley Stoker or B&W Boilers, although this is not typically practiced. Wastewater generated from the process is treated in the wastewater treatment system.

The DIMLA project, Application No. 1130004-019-AC, and the No. 4 MA Plant expansion project, Application 1130004-020-AC, are operationally and financially independent of one another. The existing capacity of the Pace plant is more than sufficient to supply DMA to the DIMLA plant without any MA expansion. The No. 4 MA Plant produces a variety of methylamines (MMA, DMA and TMA). The DIMLA plant uses one of these materials (DMA) as a starting material to make DIMLA. Consumption of DMA in the DIMLA unit is only about 3% of the Pace plant's existing DMA capacity in 2012. The Applicant states that the MA expansion project would be executed in absence of the DIMLA project. Without

an MA expansion, Taminco cannot satisfy expected demands, unrelated to DIMLA, that stem from the volume demand growth of its MA and MA derivatives customers.

Taminco performed a PSD applicability analysis for the project to determine if any regulated compounds would be subject to PSD review. All of the process gas from the new or modified equipment for the proposed project is vented to the existing No. 4 MA Plant low pressure and high pressure absorber vents and ultimately destroyed in the Flare.

The following guidelines were used in evaluating the changes in emissions:

- The **baseline period selected** for the emissions increase calculations is January 2010 to December 2011 for all compounds. This **baseline period** was used where possible; however, a pre-project potential to emit to post project potential to emit approach was used where those data were not available. Taminco has documented that the No. 4 MA Plant is currently capable of producing methylamines at the current maximum capacity.
- **Projected actual emission**s increases for all sources were calculated utilizing maximum throughput or design information and available emission factors or methodologies.

- For the steam increase calculation, the projected maximum steam rate for the No. 4 MA Plant was used in conjunction with representative utilization for the existing Riley Stoker and B&W Boilers and the on-site Cogen units (Approximately 47% of the steam will come from the Gulf Power Cogen units and the remaining 53% will be produced by the Riley Stoker and B&W boilers) and representative emission factors. Because Taminco is installing equipment that will reduce the amount of steam required to produce a pound of product for the entire No. 4 MA Plant, the projected actual steam demand was determined to be 1.939 times the baseline actual steam demand.
- Installation of FGR control on the existing Riley Stoker and B&W Boilers is conservatively assumed to provide a 50% NOx control over baseline. Note: The AP-42 NOx emission factor for FGR control is lower than the proposed NOx emission factor used for FGR control from the Riley Stoker and B&W Boilers.
- Due to the complexity of the project (i.e., steam reduction at only the No. 4 MA Plant and installation of FGR on the Riley Stoker and B&W Boilers), only the **baseline and projected actual emissions** for the portion of the Riley Stoker and B&W Boilers impacted by the No. 4 MA Plant expansion are presented. The actual reduction in NOx emissions associated with the steam demand for the plant (facility wide) was documented separately (56.3 tons), **but the applicant did not "net" those emissions.**

As provided in the application, the following table summarizes potential emissions and PSD applicability for the project.

Table A. Potential Emissions (Tons/Year) and PSD Applicability

Pollutant (TPY)	Facility Potential To Emit		Baseline Actual Emissions*	Projected Actual Emissions*	Project Emissions Increase	Significant Emissions Rate	Subject To PSD?
	Pre Project PTE	Post Project PTE					
CO	169.1	169.1	35.6	63.1	27.44	100	No
NO_X	458.45	258.5	46.4	63.1	16.73	40	No
PM/PM_{10}	22.81/22.8	16.6/16.6	1.5/1.5	3.0/3.0	1.5/1.49	25/15	No
$PM_{2.5}$	22.8	16.6	1.5	3.0	1.49	10	No
SO_2	14.79	16.2	0.2	0.3	0.15	40	No
VOC	141.69	147.6	65.4	83.8	18.44	40	No
Methanol (HAP)	67.38	72.0	52.2	63.7	11.55	N/A	N/A

* Baseline and Projected Actual Emissions related only to this project.

The Pre Project PTE in Table A above is the Facility-wide potential to emit after startup of the DIMLA unit.

As a chemical processing plant with emissions of NOx, CO and VOC greater than 100 TPY, this facility is a major stationary source with respect to PSD. However, as shown in Table A above, the project emissions increases will not reach or exceed the PSD significant emissions rates; therefore, the project is not subject to PSD preconstruction review.

This project does not constitute a major modification at this stationary source, as defined by Code of Federal Regulations 40 CFR 51.165(a)(1)(v)(A).

This permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C., for several pollutants. However, the project is not subject to PSD monitoring, reporting and recordkeeping provisions required by Rule 62-212.300(1)(e), F.A.C., because this project is not part of a major modification and there is no reasonable possibility, as defined by Code of Federal Regulations 40 CFR 51.165(a)(6)(vi), that the projected actual emissions will result in a significant emissions increase for any PSD pollutant.

3. APPLICATION REVIEW

Application Fee: No application fee is required for a Title V facility.

Discussion of Emissions

NOx emissions increase primarily from burning additional fuel in the existing boilers and cogen units that will supply the additional steam needed at the No. 4 MA Plant. There is also an increase in NOx emissions from the flare.

Emissions of VOC are primarily from fugitive emissions associated with the additional loading to the existing wastewater treatment system.

Emissions of CO, PM/PM_{10} and $PM_{2.5}$ and SO_2 result primarily from the existing boilers and cogen units supplying steam to the expanded No. 4 MA Plant. There is also an increase in CO and SO_2 emissions from the existing flare due to increased process gas flow to the flare from the expanded No. 4 MA Plant. Emissions of PM/PM_{10} and $PM_{2.5}$ from the cooling towers will increase due the increased circulation rate.

~~PSD Pollutant Emissions Increase Estimates for the No. 4 Methylamines Expansion Project are given in Table 3, Facility Wide Potential to Emit for the No. 4 Methylamines Expansion Project is given in Table 4.~~

Table 3 - PSD Pollutant Emissions Increase Estimates - No. 4 Methylamines Expansion Project

	Emissions (TPY)										
	VOC	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NO_x**	**CO**	**F**	**SAM**	**TRS/H_2S**	**Pb**	**CO_2e**
Baseline Actual Emissions											
Riley Stoker Boiler (EU 001)	0.3	0.4	0.4	0.03	14.5	4.2	--	--	--	2.49E-05	5,993
B&W Boiler (EU 003)	0.3	0.4	0.4	0.03	15.0	4.5	--	--	--	2.69E-05	6,464
Gulf Power Cogen Boilers	0.5	0.7	0.7	0.1	12.7	7.3	--	--	--	4.34E-05	10,372
Flare (EU 005)	7.9	0.0	0.0	0.1	3.8	19.4	--	--	--	--	6,131
Methylamines Plant Nos. 1 and 4 Group 1 HON Storage Tanks (EU029)	1.9	--	--	--	--	--	--	--	--	--	--
Methylamines Plant No. 4 HON Maintenance Wastewater (EU 035)	2.7	--	--	--	--	--	--	--	--	--	--
MA Plant No. 4 Gas Fired Heater (EU 060)	0.008	0.021	0.021	0.002	0.39	0.23	--	--	--	1.40E-06	333
Facility Equipment Leak Fugitives (part of EU 062)	2.6	--	--	--	--	--	--	--	--	--	--

CT67038 Cooling Tower - (part of EU 063)	0.0001	0.1	0.1	--	--	--	--	--	--	--	--
Wastewater Treatment (EU 075) - Baseline Potential	49.2	--	--	--	--	--	--	--	--	--	--

Projected Future Actual Emissions											
Riley Stoker Boiler (EU 001)	0.6	0.7	0.7	0.1	15.6	8.1	--	--	--	4.83E-05	11,621
B&W Boiler (EU 003)	0.6	0.8	0.8	0.1	14.6	8.8	--	--	--	5.21E-05	12,535
Gulf Power Cogen Boilers	0.9	1.3	1.3	0.1	24.6	14.1	--	--	--	8.42E-05	20,114
Flare (EU 005)	13.0	0.0	0.0	0.1	7.0	31.2	--	--	--	--	9,878
Methylamines Plants Nos. 1 and 4 Group 1 HON Storage Tanks (EU029)	2.4	--	--	--	--	--	--	--	--	--	--
Methylamines Plant No. 4 HON Maintenance Wastewater (EU 035)	2.8	--	--	--	--	--	--	--	--	--	--
MA Plant No. 4 Gas Fired Heater (EU 060)	0.027	0.073	0.073	0.0057	1.3	0.8	--	--	--	4.78E-06	1,142
Facility Equipment Leak Fugitives (part of EU 062)	3.3	--	--	--	--	--	--	--	--	--	--
CT67038 Cooling Tower - (part of EU 063)	0.00015	0.15	0.15	--	--	--	--	--	--	--	--
Wastewater Treatment (EU 075) - Future Potential	60.1	--	--	--	--	--	--	--	--	--	--
Totals											
Baseline Actual Emissions	65.4	1.5	1.5	0.2	46.4	35.6	0.0	0.0	0.0	9.66E-05	29,296
Projected Future Maximum Actual Emissions	83.8	3.0	3.0	0.3	63.1	63.1	0.0	0.0	0.0	1.89E-04	55,299
Project Emissions Change	18.44	1.49	1.49	0.15	16.73	27.44	0.0	0.00	0.00	9.28E-05	26,004
PSD Significance Levels	40	15	10	40	40	100	3	7	10	0.6	75,000
PSD Review Required	No	No	No	No	No	No	No	No	No	No	No
Reasonable Possibility (Increases)	18.44	1.49	1.49	0.15	16.7	27.4	0.0	0.0E+00	0.00	9.28E-05	26,004
Reasonable Possibility Trigger (50% of Sig Level)	20	8	5	20	20	50	1.5	3.5	5	0.3	37,500
PSD Emissions Tracking & Recordkeeping Required?	No	No	No	No	No	No	No	No	No	No	No
NOx Emission Reduction for Remaining Facility Steam Usage - Due to FGR	--	--	--	--	-56.3	--	--	--	--	--	--

Table 4 - Facility Wide Potential to Emit for the No. 4 Methylamines Expansion Project

	Emissions (TPY)							
	VOC	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	Lead	CO_2e less biogenic
Riley Stoker Boiler (EU 001)	4.5	5.5	5.5	15.6	112.6	60.0	0.0	65,501
B&W Boiler (EU 003)	3.9	5.4	5.4	0.43	100	60.0	0.0	65,390
Flare (EU 005)	15.1	0.0	0.0	0.1	29.0	39.0	--	12,324
Methylamines No. 1 Plant Gas-Fired Heater (EU 006)	0.1	0.3	0.3	0.0	6.0	3.6	--	5,125.6
Higher Amines Plant Gas-Fired Heater (EU 007)	0.1	0.3	0.3	0.0	5.0	3.0	--	4,305.5
Methylamines Plants Nos. 1 and 4 Group 1 HON Storage Tanks (EU 029)	2.4	--	--	--	--	--	--	--
Methylamines Plant No. 4 Process Vents (EU 033)	--	--	--	--	--	--	--	--
Methylamines Plant No. 4 Wastewater (EU 034)	--	--	--	--	--	--	--	--
Methylamines Plant No. 4 HON Maintenance Wastewater (EU 035)	2.8	--	--	--	--	--	--	--
Methylamines Plants 1 and 4 HON Equipment Leaks (EU 036)	--	--	--	--	--	--	--	--
Methylamines Plant No. 4 VOC Equipment Leaks (EU 037)	--	--	--	--	--	--	--	--
Sitewide HON Heat Exchangers (EU 046)	0.5	--	--	--	--	--	--	--
Methanol Storage HON Maintenance Wastewater (EU 047)	2.1	--	--	--	--	--	--	--
Methylamines Plants Sample Points (EU 048)	0.03	--	--	--	--	--	--	--
Methylamines Plant No. 1 Process Vents (EU 049)	--	--	--	--	--	--	--	--
Methylamines Plant No. 1 Wastewater (EU 050)	--	--	--	--	--	--	--	--
Methylamines Plant No. 1 HON Maintenance Wastewater (EU 051)	0.05	--	--	--	--	--	--	--
Methylamines Plants Nos. 1 & 4 HON Group 2 HON Storage Tanks (EU 053)	--	--	--	--	--	--	--	--
72" Batch Column Process Vents (EU 055)	--	--	--	--	--	--	--	--
72" Batch Column MON Maintenance Wastewater (EU 056)	0.6	--	--	--	--	--	--	--
Higher Amines and 72" Batch Column MON Equipment Leaks (EU 057)	--	--	--	--	--	--	--	--
Higher Amines and 72" Batch Column MON Group 2 Storage Tanks (EU 058)	--	--	--	--	--	--	--	--
72" Batch Column MON Wastewater (EU 059)	--	--	--	--	--	--	--	--
MA Plant No. 4 Gas Fired Heater (EU 060)	0.12	0.3	0.3	0.0	6.0	3.6	0.0	5,125.6
Facility Equipment Leak Fugitives (part of EU 062)	29.4	--	--	--	--	--	--	--
Cooling Tower - (EU 063)	0.0048	4.8	4.8	--	--	--	--	--
Higher Amines and 72" Batch Column Group 2 MON Transfer Rack (EU 066)	--	--	--	--	--	--	--	--
Higher Amines Process Vents (EU 070)	--	--	--	--	--	--	--	--
Higher Amines MON Maintenance Wastewater (EU 071)	1.9	--	--	--	--	--	--	--
Higher Amines MON Wastewater (EU 072)	--	--	--	--	--	--	--	--

Higher Amines and 72" Batch Column Group 1 MON Storage Tanks (EU 073)	--	--	--	--	--	--	--	--
Sitewide MON Heat Exchangers (EU 074)	0.5	--	--	--	--	--	--	--
Wastewater Treatment (EU 075) - Future Potential	60.1	--	--	--	--	--	--	--
DIMLA Plant - Group 2 Storage Tank	0.1	--	--	--	--	--	--	--
DIMLA Plant - MON Group 2 Wastewater	--	--	--	--	--	--	--	--
DIMLA Plant - MON Maintenance Wastewater	0.5	--	--	--	--	--	--	--
DIMLA Plant - MON Equipment Leaks	--	--	--	--	--	--	--	--
DIMLA Plant - MON Group 2 Transfer Racks	0.001	--	--	--	--	--	--	--
DIMLA Plant - VOC Equipment Leaks	6.0	--	--	--	--	--	--	--
Facility Totals After Project	147.6	16.6	16.6	16.2	258.5	169.1	0.0051	157,772

Note: Emissions Units in 'RED' are affected by this project.

State Requirements

Rules 62-210.300(1), 62-210.370, 62-212.300, 62-213 and 62-212.400(12), F.A.C.

Federal NSPS Provisions

The proposed Project is subject to New Source Performance Standards (NSPS) 40 CFR 60 Subparts VVa, NNN, and RRR. Compliance with NSPS VVa, NNN, and RRR will be demonstrated through compliance with the Hazardous Organic NESHAP (HON).

The proposed 20,000 gallons ammonia/methylamines recycle feed tank (D-67044) is subject to NSPS 40 CFR 60 Subpart Kb.

Federal NESHAP Provisions

The existing and proposed expansion of the No. 4 MA Plant is subject to National Emissions Standards for Hazardous Air Pollutants (NESHAP) Hazardous Organic NESHAP (HON) and Miscellaneous Organic NESHAP (MON), 40 CFR 63 subparts F, G, H and FFFF.

The original No. 4 plant was constructed in 1998; therefore, the No. 4 MA Plant is already subject to subparts NNN and RRR of 40 CFR 60. The proposed expansion of the No. 4 MA Plant will include new distillation units and reactor processes. Taminco elects to comply with Group 1 requirements of HON for process vents with the expanded plant. Note that per 63.110(d)(4) and 63.110(d)(7), Group 1 process vents which are subject to the provisions of 40 CFR 60 subparts NNN and/or RRR are required to comply only with the provisions of subpart G (HON) after the compliance dates specified in 63.100 of subpart F. Taminco will continue to comply with the HON Group 1 provisions per 40 CFR 63.110(d)(4) and (d)(7).

Other Draft Permit Requirements

There are no additional draft permit requirements.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. Howard Ard is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer, Howard Ard, at 850.595.0622 or howard.ard@dep.state.fl.us.